

## Abstract

For optically measuring black carbon in the atmosphere an aerosol particle collection area of a filter tape is continually illuminated by an illumination source with light of one or more wavelengths. Transmitted and reflected light fractions are measured at several precisely defined angles or angle ranges, such as of  $0^\circ$ ,  $120$  to  $140^\circ$  and  $165$  to  $180^\circ$  by means of photodetectors arranged correspondingly relative to the illumination source, achieving maximum symmetry for the angles to be measured. The loading of the filter tape collection area with light absorbing aerosol material is continually determined from the change in the optical properties of the collection area with the aid of known algorithms from transmissivities and reflectivities as detected.